ANTITRUST, PATENT POOLS, AND THE MANAGEMENT OF UNCERTAINTY

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I. INTRODUCTION

Much has been written in recent years on the role of antitrust law in regulating the conduct of combinations of high-technology firms.[1] Some commentators have concluded that existing law is equal to the tasks of distinguishing the procompetitive benefits from the anticompetitive effects of such combinations and policing the anticompetitive restraints appropriately.[2] Others have suggested that some important policy concerns -- most notably the encouragement of technological innovation -- are not adequately addressed by established antitrust analysis, and that significant changes in antitrust doctrine and enforcement policy are needed.[3] Because antitrust is essentially a common-law field in which the basic statutes are written in the most general terms and new legislation tends to be rare and incremental, any agenda for significantly changing antitrust analysis must contend with the case law.

This article critically evaluates the antitrust case law that has been applied to patent pooling arrangements -- a specific type of combination that is often employed by high-technology firms. Section I briefly reviews the major antitrust policy issues that arise in the analysis

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[1]. *See generally* FEDERAL TRADE COMMISSION STAFF, ANTICIPATING THE 21ST CENTURY: COMPETITION POLICY IN THE NEW HIGH-TECH, GLOBAL MARKETPLACE (1996); Joseph Kattan, *Antitrust Analysis of Technology Joint Ventures: Allocative Efficiency and the Rewards of Innovation*, 61 ANTITRUST L.J. 937 (1993); ANTITRUST, INNOVATION AND COMPETITIVENESS (Thomas M. Jorde &. David I. Teece eds., 1992) [hereinafter "Jorde & Teece"]; Janusz A. Ordover &. Robert D. Willig, *Antitrust for High-Technology Industries: Assessing Research Joint Ventures and Mergers*, 28 J. L. & ECON. 311 (1985).

[2]. *See, e.g.*, FTC STAFF, *supra* note 1; Kattan, *supra* note 1.

[3]. *See, e.g.*, Jorde & Teece, *supra* note 1.

of patent pools. Section II analyzes four of the leading United States Supreme Court cases applying antitrust law to pooling arrangements. In Section III, two high-technology patent pooling arrangements recently reviewed by the Justice Department and the Federal Trade Commission -- the *MPEG-2* and *Summit/VISX* patent pools [4] -- are analyzed under antitrust doctrine derived from Supreme Court cases and in light of current policy concerns. Consideration of the complex facts of these two recent cases highlights serious weaknesses in the established antitrust analysis of patent pools and suggests an agenda for future doctrinal development.

II. ANTITRUST CONCERNS IN THE ANALYSIS OF PATENT POOLS

Although they take many different forms, patent pooling arrangements are essentially reciprocal agreements to share patent rights. Because a patent is a right to exclude, the basic legal mechanism for sharing patent rights in a pool is a "mutual agreement among patent owners to waive their exclusive patent rights."[5]

The threshold concern in the antitrust analysis of patent pools is allocative efficiency; that is, in this context, avoiding the deadweight loss of monopoly attributable to the exercise of market power by firms that have combined to share intellectual property rights in a pooling arrangement.[6] Above and beyond the traditional concern with *static* allocative efficiency is that of fostering technical innovation or *dynamic* efficiency.[7] The concern with innovation or dynamic efficiency holds

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[4]. MPEG-2, Business Review Letter, 1997 DOJBRL LEXIS 14 (Dep't of Justice Jun. 26, 1997); Summit Technology, Inc., FTC Dkt. No. 9286 (Aug. 21, 1998), *available at* http://www.ftc.gov/os/1998/d09286viagr.htm.

[5]. Roger B. Andewelt, *Analysis of Patent Pools Under the Antitrust Laws*, 53 ANTITRUST L.J. 611 (1984).

[6]. *See generally* WARD S. BOWMAN, JR., PATENT AND ANTITRUST LAW: A LEGAL AND ECONOMIC APPRAISAL 1 (1973) (common goal of patent and antitrust law is wealth maximization).

[7] One commentator expressed the relative importance of static and dynamic efficiency as follows:

> An antitrust policy that reduced prices by 5 percent today at the expense of reducing by 1 percent the

within it at least two conceptually distinct dimensions to be considered in the evaluation of pooling arrangements: First, the encouragement of initial inventive innovation, and second, follow-on or sequential innovation.[8] As will be illustrated by the cases discussed below, pooling arrangements may enhance both static and dynamic efficiency by, for example "integrating complementary technologies, reducing transaction costs, clearing blocking positions, and avoiding costly infringement litigation."[9] On the other hand, depending on their structure and restraints, patent pools can also reduce static and dynamic efficiency.[10]

Whether a pooling arrangement is likely to be procompetitive or anticompetitive is substantially determined by the economic relationship of the pooled patents. The conventional taxonomy describes the economic relationships among pooled patents as competing, complementary, blocking, or unrelated.[11] Combinations of

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> annual rate at which innovation lowers the costs of production would be a calamity. In the long run a continuous rate of change, compounded, swamps static losses.

Frank H. Easterbrook, *Ignorance and Antitrust*, *in* Jorde & Teece, *supra* note 1, at 122-23.

[8]. On the economics of incremental or sequential innovation, *see, e.g.*, John H. Barton, *Patents and Antitrust: A Rethinking in Light of Patent Breadth and Sequential Innovation*, 65 ANTITRUST L. J. 449 (1997); Jerry R. Green & Suzanne Scotchmer, *On the Division of Profit in Sequential Innovation*, 26 RAND J. ECON. 20 (1995); Howard F. Chang, *Patent Scope, Antitrust Policy, and Cumulative Innovation*, 26 RAND J. ECON. 34 (1995); Robert P. Merges & Richard Nelson, *Market Structure and Technical Advance: The Role of Patent Scope Decisions*, *in* Jorde & Teece, *supra* note 1, at 82. A central and vigorously debated issue in this literature is the socially optimal division of returns among initial innovators and follow-on innovators. *See* Barton, *supra*, at 450-53 (summarizing sources).

[9]. U.S. Department of Justice & Federal Trade Commission, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY § 5.5 (Apr. 6, 1995)(Hereinafter *IP Guidelines*); *see also* Andewelt, *supra* note 5, at 615-17.

[10]. *See* Andewelt, *supra note 5*, at 617-619.

[11]. *See Id.* at 613-14; *see also* BOWMAN, *supra* note 6, at 200 ("Merging of patents, like merging of other assets, may be horizontal,

complements generally establish vertical relationships.[12] Thus the combination of complements in a patent pooling arrangement promises the economic benefits of vertical integration; particularly, the reduction of transaction costs and the elimination of successive monopolies or "double marginalization."[13] In the purest case, the relationship is *completely* vertical if two firms each possess patents that would block the other from using its respective technologies, and it is not possible for either firm to invent around the other's position or challenge its validity or scope.[14] In such a case, the firms would not "have been actual or likely potential competitors in a relevant market in the absence of the license."[15] The connection between blocking relationships and innovation bears emphasis because what is paradigmatically "blocked" in a "blocking" relationship among patents is the practice of an innovative, patented *improvement* upon an existing patented invention.[16] "Blocking" is a well-recognized problem of patent scope

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vertical, or conglomerate.").

[12]. *See IP Guidelines* § 3.3

[13]. *See generally* W. KIP VISCUSI, JOHN M. VERNON & JOSEPH E. HARRINGTON, JR., ECONOMICS OF REGULATION AND ANTITRUST 221-24 (1992).

[14]. The *IP Guidelines* describe the problem of blocking patents as follows:

> Sometimes the use of one item of intellectual property requires access to another. An item of intellectual property "blocks" another when the second cannot be practiced without using the first. For example, an improvement on a patented machine can be blocked by the patent on the machine. Licensing may promote the coordinated development of technologies that are in a blocking relationship. *IP Guidelines* § 2.3.

[15]. *Id.*, § 3.3.

[16]. *See, e.g., Standard Oil Co. (Indiana) v. United States*, 283 U.S. 163, 171 n.5 (1931)(blocking often arises "where patents covering *improvements* of a basic process, owned by one manufacturer, are granted to another")(emphasis added); *Carpet Seaming Tape Licensing*, 616 F.2d 1133, 1142 (9th Cir. 1980)(noting "well-established law that patents on basic processes and products may block patents on improvements to those products and processes"), *cert. denied*, 464 U.S. 818 (1983); *International Nickel Company v. Ford Motor Company*, 166 F. Supp. 551, 565-66 (S.D.N.Y. 1958)(upholding non-exclusive grantback where practice

that typically arises when an improvement upon an existing patented invention is sufficiently useful, novel, and nonobvious to be patented itself:

> Two patents are said to block each other when one patentee has a broad patent on an invention and another has a narrower patent on some improved feature of that invention. The broad patent is said to "dominate" the narrower one. In such a situation, the holder of the narrower ("subservient") patent cannot practice her invention without a license from the holder of the dominant patent. At the same time, the holder of the dominant patent cannot practice the particular improved feature claimed in the narrower patent without a license.[17]

Where such a blocking relationship exists, a licensing arrangement that permits the practice of the subservient improvement patent encourages sequential innovation and is therefore procompetitive. At the opposite pole, firms would be solely horizontal competitors if their intellectual property were pure substitutes. In that case, price, output, or territorial restraints in connection with a cross-licensing or pooling arrangement could harm competition in the same manner as such restraints among competitors can do so outside the intellectual property context.[18] It follows, then, that the characterization of the economic relationship among pooled patents is crucial to the antitrust analysis of any patent pooling arrangement.

Unfortunately, intellectual property often defies orderly categorization. The relationships among patents may, for example, have

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of improvements upon licensed patents would be otherwise blocked); Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 1009-10 (1997)("Blocking" arises where "[t]he original patent owner can prevent the improver from using his patented technology, but the improver can also prevent the original owner from using the improvement."); Andewelt, *supra* note 5, at 614 ("If the practicing of your discovery infringes the patent on the invention that you improved upon, you cannot practice your patent unless you receive a license under that basic patent. In such case, the original patent "blocks" the practicing of your patent.").

[17]. Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 860-61 (1990).

[18]. *IP Guidelines* § 5.5.

both complementary and horizontal aspects.[19] Alternatively, the relationship among some patents may be best described as fundamentally uncertain or indeterminate. In part, this stems from the nature of the patent system. A patent is, after all, no more than a right to exclude based on a recitation of claims allowed by the Patent and Trademark Office; the right to bring an infringement lawsuit. Although it is only infringement litigation that offers a formal test of a patent's exclusionary power, untested perceptions of a patent's breadth or of a patent's "strength" or "weakness" may literally move markets. And as we shall see below, such perceptions can play a crucial part in the formation and conduct of patent pools.

III. SUPREME COURT POOLING CASES

A. *Bement v. National Harrow*: Horizontal Combination Allowed[20]

The first Supreme Court case to apply the Sherman Act to a patent pooling arrangement was *E. Bement & Sons v. National Harrow Co*.[21] In the *Bement* case, the Court favored the economic interests and legal rights of initial patent holders to the virtual exclusion of other important concerns, such as static efficiency and incentives for follow-on innovators. The result was a legal blessing for an industry-wide, price-fixing patent pool that accomplished no apparent integration of complementary technologies.

The technology at issue in *Bement* -- a farming implement called a "float spring tooth harrow" -- was the subject of several patent infringement suits among various manufacturers in the late 1880s and

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[19]. *Cf.* Bowman, *supra* note 6, at 202 ("[T]he relationship that patents bear to each other is not often an either/or matter. The relationship of patented processes or products can be competing, complementary, or blocking, or a little of each"); *see also* Gilbert Goller, *Competing, Complementary and Blocking Patents: Their Role in Determining Antitrust Violations in the Areas of Cross-Licensing, Patent Pooling and Package Licensing*, 50 J. PAT. OFF. SOC'Y 723 (1968).

[20]. Portions of this discussion have been adapted from Willard K. Tom & Joshua A. Newberg, *Antitrust and Intellectual Property: From Separate Spheres to Unified Field*, 66 ANTITRUST L. J. 167 (1997).

[21]. 186 U.S. 70 (1902).

the first months of 1890. In September of 1890, six of the firms that had been parties to the patent infringement litigation settled their lawsuits and agreed to assign their float spring tooth harrow patents -- eighty-five in all -- to the newly-formed National Harrow Company (National Harrow). In exchange for assigning their patents to National Harrow, the six firms received shares in the Company and a license to manufacture and sell float spring tooth harrows. The pool quickly grew from six to twenty-two firms accounting for over 90% of float spring tooth harrow production and sales in the United States. The pooling agreement contained numerous restrictions and obligations, three of which bear particular attention. Pool members were: (1) obliged to pay to National Harrow a one-dollar royalty for each harrow sold, (2) required to adhere to a price schedule set by National Harrow, and (3) obligated to manufacture and sell only the type of harrow they had been manufacturing at the time they entered into the license with National Harrow. When one of the pool members -- E. Bement & Sons -- refused to follow the price schedule, National Harrow sued for breach of contract. Bement raised the defense that the contract by which it had joined the pooling arrangement was invalid and unenforceable because it violated the Sherman Act. Holding for National Harrow, the Supreme Court explained:

> ... [T]he general rule is absolute freedom in the use or sale of rights under the patent laws of the United States. The very object of these laws is monopoly, and the rule is, with few exceptions, that any conditions which are not by their very nature illegal with regard to this kind of property, imposed by the patentee and agreed to by the licensee for the right to manufacture or use or sell the article, will be upheld by the courts. The fact that the conditions in the contracts keep up the monopoly or fix prices does not render them illegal.[22]

In its reasoning, the Court begins with the premise that a patent confers a "monopoly." The patent "monopoly" here is not the same as the economic "monopoly" in current antitrust analysis of market power.[23] It is rather the bundle of exclusionary rights granted by society to the

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[22]. *Id.* at 91 (emphasis added).

[23]. *See, e.g., IP Guidelines* § 2.2 (defining "market power" as "the ability to maintain prices above, or output below, competitive levels for a significant period of time").

patentee in exchange for the benefits of inventive activity.[24] In the opinion of the *Bement* Court, that "bundle" included the rights to combine with other patentees in industry-wide pooling arrangements.[25] Intertwined with the arguments based on the rights of the patent holder, the Court articulated several additional justifications for the restraints in the patent pooling agreement: The pool provided the basis for settling "a large amount" of infringement litigation; in its view, "a legitimate and desirable result in itself."[26] Fixing the sale price of the manufactured harrows was also "appropriate and reasonable," given the "nature" and "value" of the implements, and the patent holder's right to set the price at which a licensee sells a product manufactured with the licensed patent.[27] Even the restriction that barred any pool member from using any technology other than that which he had contributed to the pool was lawful: first, because the restraint "had no *purpose* to stifle competition," nor to "prevent the licensee from attempting to make any improvement in harrows"; and second, because the prohibition prevented Bement from infringing the patents of other pool members.[28]

Although *Bement* has an internal philosophical coherence that follows from the Court's expansive understanding of the patentee's rights, the decision is fundamentally flawed. It is instructive, nevertheless, for the analytical issues it raises. One threshold problem with the opinion is its failure to inquire rigorously into the economic relationship among the pooled patents and relevant market or markets affected by the pooling arrangement. Although the Supreme Court's opinion is ambiguous as to the precise economic relationship of the pooled patents, factual accounts in lower court cases strongly suggest that most or all of the National Harrow pool members held patents covering *competing* methods or designs for manufacturing float spring tooth harrows.[29] It also seems likely that the pool included some complementary patents of use in manufacturing float spring tooth harrows. But since the pool prohibits members from integrating the complementary patents of other members, no economic benefit was

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[24]. *Bement*, 186 U.S. at 88-89.

[25]. *Id.* at 91, 93.

[26]. *Id.* at 93.

[27]. *Id.*

[28]. *Id.* at 94 (emphasis added).

[29]. *See generally National Harrow Co. v. E. Bement & Sons*, 47 N.Y.S. 462 (1897); *National Harrow v. Hench*, 76 F. 667 (E.D. Pa. 1896).

realized from "combining" the complements in the National Harrow pool.

What are the relevant markets for purposes of analyzing the effects of the National Harrow patent pool? There appear to be two: A "technology" market for patents covering the manufacture of float spring tooth harrows, and a "goods" market for the harrows themselves. A technology market is appropriate in this case because there seem to have been market transactions for the patents (manufacturers buying, selling, and licensing harrow patents) that were separate and distinct from the sales of the manufactured harrows to wholesalers or directly to farmers.[30] Indeed, the pool itself may be understood as a transaction in the technology market. Of course float spring tooth harrow technology and float spring tooth harrows would constitute relevant markets only if there were no close substitutes for them. Although the record is less than complete on this issue, it suggests that float spring tooth harrows were the state of the art at the turn of the century. As Judge Follett of the New York Supreme Court's Appellate Division explained:

> A harrow is an implement as important and as generally used by farmers as a plow, and is quite as necessary for the proper cultivation of land as any other agricultural implement, and is in use on every properly cultivated farm. Float spring tooth harrows have come into general use and have largely superseded the old-fashioned square and three-cornered harrows or drags having peg teeth . . . .[31]

The National Harrow patent pool, then, appears to have been a cartel arrangement that combined substantially all of the patented technologies for the manufacture of a product for which there were no close substitutes. The pool fixed the downstream sale price of the manufactured harrows as well, and, as noted earlier, flatly prohibited follow-on innovation by barring pool members from using any technology other than that which they had brought with them when they joined the pool. The anticompetitive effects of the Harrow pool were probably not appreciably different from the anticompetitive effects

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[30]. *IP Guidelines* § 3.2.2 ("Technology markets consist of the intellectual property that is licensed [the 'licensed technology'] and its close substitutes--that is, the technologies or goods that are close enough substitutes significantly to constrain the exercise of market power with respect to the intellectual property that is licensed").

[31]. *National Harrow*, 1897 N.Y. App. Div. LEXIS 2013 at **14.

of most other agreements among competitors exercising market power; *i.e.*, supracompetitive prices, reduced output, and/or reduced innovation. In the technology market, in the absence of the pool, the holders of different float spring tooth harrow patents might have competed for manufacturer licensees. Prospective licensees might have engaged in bidding for licenses to the patented technologies they judged to be most efficient. In the downstream goods market, in the absence of the pool restraints, harrow manufacturers -- whether they were technology licensees or patent holders themselves -- would have been free to compete on price and, by means of licensing complementary technology, to improve their products. On the other side of the ledger, the pool allowed float spring tooth harrow patent holders -- initial innovators and their assignees -- to profit from the technologies they had patented. Allowing patent holders to profit from their inventions is, to borrow Justice Peckham's phrase, "a legitimate and desirable result in itself," in that it rewards initial innovation. But by pooling competing patents, National Harrow's shareholders placed themselves in a position to receive a return on the pooled patents that would have likely included a supracompetitive premium in excess of that which the individual patent holders would have been able to extract in a competitive technology market. Also, since National Harrow appears to have devoted substantial resources to the legal enforcement of the pooling agreement, it is unclear whether the pool resulted in a net reduction in litigation.

It seems, then, that the expansively interpreted "rights" of the National Harrow patent holders were favored at the cost of the deadweight loss of monopoly. From what can be surmised at a distance of a hundred years, the anticompetitive effects of the National Harrow patent pool almost certainly outweighed its likely procompetitive benefits.

B. *Standard Oil (Indiana) v. United States*: Problems of Characterization

In *Standard Oil Co. (Indiana) v. United States*,[32] (also known as the "*Cracking Patents*" case) the Supreme Court reviewed several cross-licensing arrangements among four firms that held patents relating to the refinement of petroleum into gasoline.[33] The case

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[32]. 283 U.S. 163 (1931).

[33]. *Id*. at 166-67.

pointedly illustrates the problems of determining the relevant markets and the economic relationships of pooled patents, and the very confused state of the law. Although it is almost certainly the leading Supreme Court case on the subject, upon close analysis, it reads more like a cautionary tale of how easy it is to mishandle the basic analytical questions presented by patent pools.

"Cracking" is the controlled application of heat and pressure to crude oil in order to increase the yield of gasoline from the refining process.[34] First patented in 1913, the process achieved a very substantial increase in the efficiency of gasoline refining, when compared with the then-existing methods. Within a few years, several other cracking methods were patented and successive rounds of infringement litigation followed in short order. By the early 1920s, four firms emerged as the leading cracking patent holders: Standard Oil of Indiana, Standard Oil of New Jersey, the Texas Company, and the Gasoline Products Company. In hopes of preventing future litigation amongst themselves, these firms entered into a series of cross-licensing[35] agreements with each other in several different combinations, which for simplicity we will treat as a single agreement. Under the terms of the agreement, the four licensed each other's cracking patent portfolios. Each could practice the other's patents without fear of infringement and each could license the patents of other pool members to third-party licensees outside the pool.[36] In consideration for licensing their patents to third parties, the pool members received royalties set as part of the pooling arrangement.

The Justice Department sued the pool members in 1924 charging a horizontal price-fixing conspiracy in violation of the Sherman Act. Applying rule of reason analysis to the pooling arrangement, the

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[34]. For discussion of the factual background of the *Cracking Patents* case, see generally Bowman, *supra* note 6, at 203; John S. McGee, *Patent Exploitation: Some Economic and Legal Problems,* 9 J.L. & ECON. 135 (1966); JOHN LAWRENCE ENOS, PETROLEUM PROGRESS AND PROFITS: A HISTORY OF PROCESS INNOVATION (1962).

[35]. Because a cross-license is the basis of any patent pooling arrangement, this paper uses the terms "patent pool" and "cross-licensing arrangement" interchangeably.

[36]. The licensees were oil refiners who used the processes embodied in the pooled patents to refine oil into gasoline more efficiently.

Supreme Court held in favor of the pool members.[37] The case is widely, and properly, cited for the proposition that patent pools are to be analyzed in most cases under the rule of reason. But it is also frequently cited for the far less certain proposition that patent pools do not offend the antitrust laws if they are entered into in order to resolve blocking relationships. The source of this latter interpretation is the Court's statement in a single footnote that cross-licensing agreements settling "legitimately conflicting claims" are not precluded by the Sherman Act and "are frequently necessary if technical advancement is not to be blocked by threatened litigation."[38] The footnote continues:

> This is often the case where patents covering improvements of a basic process, owned by one manufacturer, are granted to another. A patent may be rendered quite useless, or "blocked," by another unexpired patent which covers a vitally related feature of the manufacturing process. Unless some agreement can be reached, the parties are hampered and exposed to litigation.[39]

Sound and sober though these words may be, they bear little relation to the Court's legal analysis of the case. This is because Justice Brandeis, writing for the Court, quite clearly identifies the pooled intellectual property not as complementary, much less *blocking* patents, but as "*competing* patented processes."[40] A third possibility -- that these patents may have been competing, but sufficiently overlapping to provide a non-trivial basis for litigation -- is broadly consistent with the facts of the case, but entirely unexamined by the Court.

As an analysis of a horizontal combination of competing patents, the opinion is a frustrating series of useful principles articulated and missed opportunities for their application. The first useful principle is the above-quoted language on blocking patents. But, as already noted, the Court does not analyze the patents at issue in the case as blocking. The second useful principle is the application of the

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[37]. The Court held that the cross-licenses, which had been entered into in order to settle infringement and interference litigation, were not unlawful because they did not create monopoly power for the members of the pool. Standard Oil, 283 U.S. at 167-68 & 176-79.

[38]. *Id.* at 171.

[39]. *Id.* at 171 n.5.

[40]. *Id.* at 176.

rule of reason to patent pooling arrangements. The purpose of the rule of reason is to inquire into all relevant facts in order to determine whether the procompetitive benefits of a business arrangement outweigh its anticompetitive effects. In the case of patent pools, which will often be efficient combinations of complementary assets, such analysis of costs and benefits is likely to be an appropriate use of judicial resources. In this case, however, the Court, like the drunk who searches for his lost keys only under the light of the street lamp, looked in the wrong place for anticompetitive effects and found none.

The Court looked at the pooling agreement and the licenses to third-party licensees and found no evidence of price or output restraints. The pool did not fix the price of the gasoline refined and sold by its licensees, nor did it restrict the number of licensees or their output. Pool members were free to license their own patents to third parties if they chose and were under no obligation to license the pooled patents as a single package. The Court also looked at the pool members' combined share of the gasoline market and found no evidence of "dominance." From the spotty and outdated record before the Court, Justice Brandeis determined that the defendant firms accounted for approximately 55% of cracking capacity and that cracked gasoline accounted for only 26% of total gasoline production. Based primarily on this relatively small share of total gasoline production, Brandeis appears to have misapplied the third useful principle articulated in the opinion; that is, that a patent pooling agreement among competitors that does not confer market power, can be, like some horizontal mergers, competitively benign or even procompetitive.

The Court's actual conclusion that the *Cracking Patent* pool members lacked market power may or may not have been correct. But it was almost certainly based on a competitive analysis of the wrong market. Although three of the four pool members were refiners as well as patent holders, the pool was not in the business of selling *gasoline*. The pool was in the business of selling the right to use cracking *technology*. It is appropriate, then, to look for market power and anticompetitive effects in the *technology* market.[41] Although the record

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[41]. *See IP Guidelines* § 3.2.2 ("Technology markets consist of the intellectual property that is licensed . . . and its close substitutes."). For an extended discussion of the application of antitrust technology market analysis to the *Cracking Patents* case, see Joshua A, Newberg, *Antitrust for the Economy of Ideas: The Logic of Technology Markets*, 14 HARV. J. L. & TECH. 83 (2001).

is incomplete, it suggests that the pool members' share of the technology market -- measured in terms of gasoline refined under their patented processes -- may have been over 90%.[42] By pooling the leading cracking processes and leaving only straight-run methods and inefficient cracking processes -- that is, processes that were not close substitutes -- outside of the pool, the defendant firms may well have gained market power in the technology market.

By focusing on the downstream market, Justice Brandeis missed the possible anticompetitive effects of the pool, which may have included a ~~some~~ supracompetitive premium on the royalties charged for the pooled patents. Also missed, and of potentially greater concern, were the possible effects of the pool on innovation incentives. As independent competitors, it would have been in the interests of the pool members to continue to innovate in order to gain advantage over one another in the competition for licensees. As members of the pool, the four firms could package and license each other's patents and thereby share in royalties that they may or may not have earned individually as independent firms. The incentive to engage in follow-on innovation to improve the pooled processes may have therefore been lessened.

As precedent, then, it is not clear what the *Standard Oil* case teaches beyond the general point that the rule of reason should be applied to the analysis of patent pools, which, as we will see below, did not constrain the Court in the *Line Materials* case seventeen years later. As a cautionary tale, however, it highlights the uncertainty that can often confront decision-makers seeking to evaluate actual patent pools. The economic relationship of the pooled cracking patents had a substantial horizontal component. But the pool was, at least in some part, a response to years of infringement litigation and the threat of much more to come. That suggests, as noted above, that some of the patents may have been competing, but arguably overlapping. What then? It is a question worth considering when the two modern high-technology patent pools are discussed below.

C. *United States v. Line Materials*: The Problem of Blocking Patents

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[42]. *See* George L. Priest, *Cartels and Patent License Arrangements*, 20 J. L. & ECON. 309, 329 (1977)(reviewing analyses of *Cracking Patents* market data).

If *Standard Oil* is the competing patents case that is always cited for what it says about blocking patents, *United States v. Line Materials Co.*[43] is the blocking patents case that is rarely cited for what it says about blocking patents. The holding of *Line Materials* -- that a patent pool established to resolve a blocking relationship between a dominant patent and a far more efficient improvement patent is *per se* unlawful -- is defended by no one.[44] Indeed, the FTC and DOJ enforcement guidelines implicitly, but quite unmistakably, reject its holding.[45] Yet it remains the law of the land.

In *United States v. Line Materials Co.*,[46] the Supreme Court reviewed a cross-licensing arrangement between two manufacturers of electrical equipment: Line Materials Company and Southern States Equipment Corporation. Southern held a patent covering a dropout fuse with a complicated and expensive mechanism to break electric circuits when the current becomes excessive.[47] Although Line patented a simpler and less expensive version of the dropout fuse release mechanism, it could not be used without infringing Southern's patent.[48] To resolve the blocking position, Line and Southern entered into a cross-licensing arrangement and further agreed to sublicense their combined patents to several third-party licensees.[49] Line, Southern, and the parties to the sub-license arrangements agreed to minimum price levels for the sale of circuit breakers made with the patents Line and Southern had cross-licensed.[50]

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[43]. 333 U.S. 287 (1948).

[44]. George Priest has raised the possibility that the Court may have mischaracterized the patents and that the pooling arrangement may "disguise a cartel agreement." Priest, *supra* note 42, at 357 n.5. But the only evidence he offers is the low royalty rate charged to one of the pool's principal licensees. *Id.*

[45]. *IP Guidelines* §§ 3.4 & 5.5.

[46]. 333 U.S. 287 (1948).

[47]. *Id*. at 290 n.4.

[48]. After an interference proceeding, the Patent Office had awarded "dominant claims to Southern and subservient claims to Line." *Id.* at 291 n.5 ("Only when both patents could be lawfully used by a single maker could the public or the patentees obtain the full benefit of the efficiency and economy of the inventions.").

[49]. *Id.* at 292-93, 297.

[50]. *Id*. at 293-297.

The Supreme Court held that the parties had engaged in price-fixing in violation of the Sherman Act. In the Court's view, the price fixing was obvious: "[b]y the patentees' agreement the dominant . . . and the subservient . . . patents were combined to fix prices."[51] The issue, therefore, was whether the patent laws provided defendants with immunity from the antitrust laws,[52] for "[i]n the absence of patent or other statutory authorization, a contract to fix or maintain prices in interstate commerce has long been recognized as illegal *per se* under the Sherman Act."[53] The Court concluded that there was no such immunity, explaining "that the possession of a valid patent or patents does not give the patentee any exemption from the provisions of the Sherman Act *beyond the limits of the patent monopoly*."[54]

The Court acknowledged both that, but for the cross-licensing arrangement, the blocking positions of the relevant patents made it impossible for "the public or the patentees [to] obtain the full benefit of the efficiency and economy of the inventions,"[55] and that the patents cross-licensed by Line and Southern were "not commercially competitive."[56] Nevertheless, finding no suggestion in the patent statutes of authority to combine with other patent owners to fix prices on articles covered by the respective patents,"[57] the Court reasoned that such an arrangement "outside the patent monopoly" and unlawful.[58]

If the Line and Southern patents were valid and blocking, it is difficult to find merit in the Court's *per se* condemnation of the licensing arrangement. In *Line Materials*, the patent holder's loss is society's loss. If in the absence of the Line/Southern pooling arrangement, no others attempt to combine these patents, the value of Line's more efficient circuit breaker will be lost and future innovation is discouraged.

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[51]. *Id.* at 307.

[52]. *Id.* at 309 (citing *Bement*, 186 U.S. at 92)("The Sherman Act was enacted to prevent restraints of commerce but has been interpreted as recognizing that patents were an exception.").

[53]. *Id.* at 307 (footnotes omitted).

[54]. *Id.* at 308 (emphasis added).

[55]. *Id.* at 291 & 297. *See also* Priest, *supra* note 42, at 356-58 (discussing *Line Materials* and procompetitive aspects of cross-licensing complementary and blocking patents).

[56]. *Line Materials*, 333 U.S. at 311.

[57]. *Id.* at 312.

[58]. *Id.*

If, as is more likely, others attempt to combine the two patents by concluding separate bargains with Line and Southern, the cost is likely to be higher and the output lower than would have been the case under the pooling arrangement because of the successive monopoly or "double marginalization" problem.[59]

In choosing to apply the *per se* rule, the Court focused only on the classification of the horizontal price restraint and refused to give any weight to efficiency arguments. Given that it was the fixing of the downstream prices of the circuit breakers manufactured by Line's licensees that moved the Court to condemn the entire arrangement as *per se* unlawful, it is worth exploring whether Line and Southern might have chosen any less restrictive licensing alternatives. One less restrictive alternative is a simple cross-license, with no agreements on price of any kind. The Court might have accepted such an alternative, but it would have left Line and Southern worse off than the arrangement condemned by the Court and perhaps not much better off than if they concluded no license at all. With such a cross-license, Line and Southern would become competitors in the combined technology and there would be no way -- short of the very collusion condemned by the Court -- to keep from competing away the monopoly rents of the combination.[60] Another alternative would be the same cross-license with an additional term by which Line and Southern would agree upon the royalty to be charged to third-party licensees of the combined patents, but would not set the downstream sale price of circuit breakers manufactured by the pool's licensees. Under this scenario, Line and Southern would not be competitors in the licensing of the technology, so they could share the rents from the combined patents. At the same time, the licensees of the Line/Southern pool would face a fixed input price for the combined patents, but would be free to compete on the sale price of the finished circuit breaker. Under a rule of reason analysis (especially one that gives due consideration to innovation incentives), a court should conclude that the procompetitive benefits of such an

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[59]. *See* DENNIS W. CARLTON & JEFFREY M. PERLOFF, MODERN INDUSTRIAL ORGANIZATION 527 (1990)([B]oth consumers and firms are worse off with successive monopolists than when there is a single, integrated monopolist.); F.M. SCHERER & DAVID ROSS, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE 489 (3d ed. 1990) (same).

[60]. *See* Priest, *supra* note 42, at 357.

arrangement outweigh any anticompetitive effects.[61] But under *Line Materials*, the arrangement would be condemned as *per se* unlawful because of the agreement to "fix" the royalties charged to licensees, without any balancing of competitive effects.

If the Supreme Court's antitrust analysis of patent pools resolving blocking relationships is to facilitate wealth maximization and technical advance, *Line Materials* must be overruled.

D. The *BMI* Case: Procompetitive Horizontal Price-Fixing

Broadcast Music, Inc. v. Columbia Broadcasting System[62] (*BMI*) concerns a copyright pooling arrangement. In it, the Supreme Court applies a rule of reason inquiry to a facially anticompetitive horizontal price-fixing agreement to find the procompetitive substance behind the troubling facade. Although it is relevant to the present discussion, for reasons that are discussed below, the case has not resolved the problems in patent pooling analysis raised by *Standard Oil* and *Line Materials*.

In *BMI* the Court reviewed a private plaintiff's antitrust challenge to the "blanket" licensing of music copyrights. Broadcast Music, Inc. (BMI) and the American Society of Composers, Authors and Publishers (ASCAP), serve as the nonexclusive licensing agents for thousands of composers for whom BMI or ASCAP also monitor usage, prosecute infringement, and collect and distribute royalty income.[63] Under the type of blanket license challenged in the *BMI* case, licensees, such as the CBS television network, pay a fee for the rights to broadcast any of the works in the repertories of BMI or ASCAP, for a fixed period of time, regardless of how many compositions are actually used or how often the works are broadcast. Under the blanket broadcast licenses at

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[61]. Indeed, under rule of reason analysis, a court should conclude that the original arrangement condemned by the *Line Materials* Court is lawful. Even if downstream prices are fixed -- a restraint for which there may be independent procompetitive justifications in the patent pooling context -- the *Line Materials* pool is output-enhancing when compared with no exploitation of the combined patents or double marginalization.

[62]. 441 U.S. 1 (1979).

[63]. *CBS v. ASCAP.*, 400 F. Supp. 737, 742 (S.D.N.Y. 1975) ("As a practical matter virtually every domestic copyrighted composition is in the repertory of either ASCAP . . . or BMI"), *rev'd*, 562 F.2d 130 (2d Cir. 1977), *rev'd sub. nom.*, BMI v. CBS, 441 U.S. 1 (1979).

issue in the *BMI* case, then, the fee paid by CBS as a blanket licensee was not based on charges for specific uses of specific compositions. Rather, in exchange for the right to broadcast any ASCAP and (under a separately negotiated license) any BMI composition at any time during the term of the blanket licenses, CBS agreed to pay ASCAP and BMI a fixed percentage of the network's broadcast advertising revenue.[64] Although CBS and the individual composers whose works were broadcast by the blanket licensee were free to enter into individual per-performance licensing agreements, CBS argued that the BMI and ASCAP blanket licensing arrangements amounted nevertheless to *per se* unlawful price fixing in violation of the Sherman Act.[65] More specifically, CBS contended that BMI and ASCAP were "'using the leverage inherent in [their] copyright pool to insist that . . . [blanket licensees] pay royalties on a basis which . . . [did] not bear any relationship to the amount of music performed.'"[66]

The U.S. Court of Appeals for the Second Circuit, in its opinion finding that the *BMI* licensing arrangements violated Section 1 of the Sherman Act, analogized the blanket broadcast licenses to the patent pooling agreement that had been condemned as per se unlawful price-fixing in *United States v. Line Materials, Inc.*[67] Looking beyond the form of the arrangement and refusing to accept the "price-fixing" label as a basis for *per se* condemnation of blanket broadcast licensing, the Supreme Court reversed the Second Circuit, holding that the legality of the licensing arrangement was to be determined under the rule of reason. The Court observed that "ASCAP [and BMI] and *the blanket license developed together out of the practical situation in the marketplace*;"[68] a marketplace in which the transaction costs of separately negotiating rights with respect to each individual musical

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[64]. 400 F. Supp. at 743.

[65]. At trial, price fixing was just one of five claims CBS asserted in challenging the blanket licenses. The television network also argued that the blanket licensing arrangements constituted unlawful tying, a concerted refusal to deal, monopolization, and copyright misuse. *Id*. at 745.

[66]. *Id.* (quoting from the CBS complaint).

[67]. *CBS v. ASCAP*, 562 F.2d at 136 ("There is . . . some analogy to the patent pooling cases which broadly hold that the pooling of competing, and perhaps even non-competing, patents is illegal.")(citing, *inter alia*, *United States v. Line Materials*, 333 U.S. 287 (1948)).

[68]. *BMI*, 441 U.S. at 20 (emphasis added).

composition are, for even the largest customers, prohibitively high.[69] The Court's inquiry into actual market conditions and competitive effects revealed no indication that much, if any, competition that might have existed but for the blanket licenses, had been materially restrained. Nothing, moreover, prevented individual customers from licensing compositions directly from individual composers or through other agents on a non-exclusive basis.[70] The actual effect of blanket licensing through ASCAP and BMI was rather to create competition that would otherwise have been stymied because of prohibitively high transaction costs.[71]

The contrast between the *BMI* analysis and the condemnation of the patent pooling arrangement in the *Line Materials* case is instructive. Presented with evidence in the earlier case that a patent pooling arrangement may have resolved a blocking relationship and thereby provided for the diffusion of a superior product at a lower price, the *Line Materials* Court subjected the agreement to *per se* condemnation and eschewed any serious inquiry into whether the restraint might have been procompetitive on balance.[72] As the *BMI* Court noted, a literal approach to application of *per se* rules is "overly simplistic and often overbroad."[73] The *BMI* Court looked beyond the mere classification of the restraints: *Price-fixing* this certainly was. But a careful study of the exigencies of the music licensing industry suggested that the price-fixing of BMI's blanket license could be procompetitive. The blanket license was also a massive agreement among competitors -- *i.e.*, all of the participating composers -- under the direction of a single entity. But this was not the National Harrow Company. All of the composers remained free to license their works to anyone else in any manner they chose. In the absence of a BMI or an ASCAP, however, individual composers had not been able to maximize the licensing of their works because the transaction costs were simply too high for individual composers to bear. Thus, practically speaking, in the absence of the pool, most of the composers would not have been actual horizontal competitors. Competition therefore was not restrained.

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[69]. *Id*. at 20-21.

[70]. *CBS v. ASCAP*, 400 F. Supp. at 744-45 (ASCAP and BMI licensed their repertories on a non-exclusive basis allowing any composer to license performance rights to his works to any other non-exclusive licensee.).

[71]. *BMI*, 441 U.S. at 19.

[72]. *See generally Line Materials*, 333 U.S. 287.

[73]. *BMI*, 441 U.S. at 8-9.

Nor was there any evidence that licensing prices were higher than they would have been in the absence of the pool. In the absence of a BMI, most of the music licensing transactions that now take place, would not have occurred at all. Moreover, BMI almost certainly realized substantial efficiencies in its provision of monitoring, enforcement and management services. Finally, innovation was rewarded as composers were more likely to receive royalties for the use of their works without incurring the costs of licensing individually and hence inefficiently.

Does *BMI* lift the doctrinal burdens of the earlier cases? Regrettably, it does not. *BMI* was not a patent case. Thus its application to the patent pooling context is uncertain at best. *BMI*, moreover, does not overrule *Standard Oil* or *Line Materials*, both of which remain the leading Supreme Court patent pooling cases. Perhaps most importantly, the courts and the antitrust enforcement agencies have been unwilling to embrace the full implications of *BMI*. Indeed, the case has been strangely marginalized by the widely-held view that the Supreme Court only applied rule of reason analysis (as opposed to *per se* condemnation) to the horizontal restraints in *BMI* because those restraints effectively resulted in the creation of a "new product;" *i.e.*, the blanket license for copyrighted music. If one interprets *BMI* broadly to apply the full import of its analysis, the rule of reason would apply even to patent pooling arrangements that include horizontal agreements on price. However, under the narrow interpretation of *BMI*, such pooling arrangements would only be accorded rule of reason treatment if it could be demonstrated that the restraints themselves create a new product. For these reasons, then, *BMI* remains persuasive -- albeit highly persuasive -- rather than mandatory authority for the antitrust analysis of patent pools.

IV. TWO HIGH-TECHNOLOGY PATENT POOLS

In this section, the discussion turns to two high-technology patent pools that were reviewed by the antitrust enforcement agencies within the past few years. The *MPEG-2* pool, which was the subject of a Justice Department Business Review Letter, was pronounced lawful and procompetitive, while the *Summit/VISX* pool was challenged by the Federal Trade Commission. While it may be tempting to portray the MPEG-2 pool as the model citizen and Summit/VISX as the outlaw, the reality is both more interesting and more troubling.

A. MPEG-2: "THE MODEL CITIZEN"

The MPEG-2 patent pool, having been structured and favorably reviewed under the DOJ and FTC *IP Guidelines*, is an example of how a patent pool may be organized and administered to meet the concerns of current antitrust enforcement policy regarding pooling arrangements.[74] The pool is an agreement among nine patent holders[75] to combine 27 patents that are needed to meet an international standard known as "MPEG-2 video compression technology."[76] Under the agreement, the patent holders all license their MPEG-2 patents to "MPEG LA," a licensing agent which administers the pool on their behalf. MPEG LA licenses the 27-patent portfolio to third parties who manufacture products to meet the MPEG-2 standard. The products that use the MPEG-2 patents as inputs are those that store or transmit video information: televisions, digital video disk players, telecommunications equipment, as well as cable satellite and broadcast equipment.

In structure, the *portfolio license* is broadly analogous to the *blanket license* that was analyzed in the *BMI* case.[77] On the procompetitive side of the ledger, the pooling arrangement brings together complementary inputs (the 27 MPEG-2 patents), reduces transaction costs (by creating a mechanism for one-stop shopping for most of the patents required to meet the MPEG-2 standard), and promotes the dissemination of new technology. But what of its anticompetitive effects? Because no firm can make a product that meets the MPEG-2 standard without infringing one or more of the pooled patents, there are grounds for concern. Does the pool anticompetitively exclude or disadvantage rivals, facilitate collusion, or reduce innovation incentives?

Several provisions of the arrangement substantially reduce the likelihood that the pool will anticompetitively disadvantage rivals. First, the agreement commits the licensors to extend the portfolio license on

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[74]. MPEG-2, Business Review Letter, 1997 DOJBRL LEXIS 14 (Dep't of Justice Jun. 26, 1997).

[75]. The pool members are Fujitsu, Mitsubishi, Philips, Columbia University, General Instrument, Lucent, Scientific Atlanta, Matsushita, and Sony.

[76]. *Id.* at *1 ("The technology standard eliminates redundant information . . . reducing the amount of data, storage and transmission space required to reproduce video sequences").

[77]. *See supra* Part III.D.

nondiscriminatory terms to any party requesting a license.[78] Second, although MPEG LA only licenses the portfolio as a package, any of the pooled patents may be licensed from the pool members individually.[79] Thus, a firm that does not wish to license all 27 patents need only pay for the patents it requires. Third, the patent pool is structured to reduce the likelihood of anticompetitive overbreadth. According to the agreement, the pool is limited to "essential" MPEG-2 patents, i.e., those complementary patents "necessary for compliance with the MPEG-2 standard."[80] Neither substitutable patents nor non-essential complementary technologies meet the requirements for inclusion in the pool.[81]

The structure of the agreement also minimizes the dangers that it will facilitate collusion among the licensors. Confidentiality provisions prohibit the licensing agent "from transmitting competitively sensitive information among the Licensors or other licensees."[82] The Justice Department concluded, moreover, that "since the contemplated royalty rates are likely to constitute a tiny fraction of MPEG-2 products' prices, at least in the near term, it appears highly unlikely that the royalty rate could be used during that period as a device to coordinate the prices of downstream products."[83]

Finally, nothing in the pooling arrangement appears to impose anticompetitive restraints on the development of improvements or new products and technologies. There are no provisions limiting any licensor or licensee to the use or development of the technology covered by the pooling arrangement, nor are any of the improvements developed by any licensors or licensees subject to grantback provisions.[84]

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[78]. MPEG-2, 1997 DOJBRL LEXIS at *9.

[79]. *Id.* at 15.

[80]. *Id.* at 8 n.4.

[81]. The licensors agree to submit all disputes regarding the "essentiality" of any patent, within or without the pool, to an independent patent expert whose determinations regarding continuing inclusion and exclusion of patents are binding upon pool members. *Id.* at 12-13.

[82]. *Id.* at 24.

[83]. *Id.*

[84]. While licensees are not subject to any general grantback provisions, licensors are obligated to license to the pool any patent that is determined by the independent expert to be "essential." *Id.* at 26.

Before drawing any ultimate conclusions about MPEG-2, consider the unhappy story of the Summit/VISX patent pool.

B. THE SUMMIT / VISX PATENT POOL[85]

1. Background

The technology at issue in the Summit/VISX matter is laser refractive surgery (also referred to as "Photorefractive Keratectomy" or "PRK"). PRK is a revolutionary surgical procedure in which the most common refractive errors -- nearsightedness, farsightedness, and astigmatism -- are corrected by the application of computer-controlled pulses of excimer laser light to the surface of the cornea. The excimer removes extremely precise amounts of corneal tissue by means of a process called "photochemical ablation" or "ablative photodecomposition." In this process, light from the far ultraviolet range of the spectrum interacts with corneal tissue to break the chemical

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However, improvement patents and technological alternatives to "essential" patents are not subject to the mandatory licensing requirement. *Id.* at 26 n.47.

[85]. The FTC enforcement action against Summit and VISX began with the filing of a 3-count complaint. 1998 FTC LEXIS 29 (filed Mar. 24, 1998)(administrative complaint). The complaint charged that: (1) the patent pooling arrangement between Summit and VISX – by which the firms agreed, *inter alia*, to cross-license several PRK-related patents – was an agreement in restraint of trade; (2) the agreement and related conduct constituted a conspiracy to monopolize markets for the sale of PRK equipment and the licensing of PRK technology; and (3) VISX had fraudulently procured a key PRK industry patent by withholding relevant information from the Patent and Trademark Office. *Id*. ¶¶ 25-30. Summit and VISX entered into consent agreements with the Commission settling Counts 1 and 2 of the administrative complaint, covering the issues involving the patent poling arrangement between Summit and VISX. *Summit Technology, Inc. and VISX, Inc.*, FTC Dkt. No. 9286 (filed Feb. 23, 1999)(decision and order). Administrative proceedings against VISX continued pursuant to Count 3 of the complaint and an Administrative Law Judge (ALJ) dismissed the remaining Count in May of 1999 after an administrative trial. *VISX, incorporated*, FTC Dkt. No. 9286 (filed May 27, 1999)(initial decision), *available at*, http://www.ftc.gov/os/1998/d09286viagr.htm.

bonds of the molecules non-thermally and without damage to surrounding tissue. The struggle to develop and commercialize this technology has been rife with conflict that has frequently spilled over into litigation.

In the mid-1980s, several firms began research and development of excimer lasers suitable for use in PRK. Because the lasers require approval by the Food & Drug Administration before they can be used for PRK, the long and expensive clinical trials required before FDA approval constitute a major obstacle for excimer laser firms. By the early 1990s, two firms -- Summit Technology and VISX Incorporated -- had taken the lead in the development of lasers for refractive surgery. Both had excimer lasers in FDA clinical trials and both had patents covering various aspects of the emerging PRK industry. These patents may be classified very broadly for the sake of simplicity as "method" patents covering the surgical methods used to perform PRK, and "apparatus" patents which covered the excimer laser hardware. With each of the firms vying for capital to finance the long lead time from prototype, through clinical trials, to FDA approval, Summit and VISX tried to make educated guesses about the relative scope of each other's patent portfolios based on very limited information. The stakes were potentially very high: If it was determined that the machine or process one firm was developing was within the scope of the other firm's patents, that other firm might have the power to exclude the infringing firm from the market altogether.

2. Pool Structure, Restraints, and Conduct

Against this background in June of 1992, Summit and VISX announced the formation of a patent pooling arrangement called the Pillar Point Partnership ("PPP"). Pursuant to the partnership agreement, Summit and VISX each assigned all of their PRK and PRK-related patents to PPP, and PPP licensed back the entire pooled portfolio to each of the two partners. The agreement included several other restraints: Each of the partners would be permitted to sub-license the patent portfolio to purchasers of their respective lasers. Thus, when Summit sold an excimer laser to an ophthalmologist, Summit would extend a non-exclusive sub-license to the physician so that the laser machine and PRK methods could be used without infringing the pooled patents. Both Summit and VISX further agreed that each time a procedure was performed on a Summit or VISX laser, Summit or VISX would pay a $250 per-procedure fee ("PPF") into the pool. Once paid to the pool, the fee would be distributed back to the partners; 45% to

Summit and 55% to VISX, reflecting the fact that VISX had contributed a broader patent portfolio to the pool than had Summit. Summit and VISX collected the PPF from ophthalmologists by designing their machines to work only upon the insertion of a key card. The key cards, which would activate the machine for one procedure each, were sold by Summit and VISX to purchasers of their machines for about $250 per card. By the terms of the partnership agreement, PPP was authorized to license any or all of the pooled patents to third-party licensees. The third parties likely to be interested in such licenses were other manufacturers of excimer lasers that were at different stages of development and which might infringe one or more of the PPP patents. No third-party licenses could be entered into unless both Summit and VISX agreed. Part and parcel of this "single-firm veto" provision was an absolute prohibition upon Summit or VISX licensing unilaterally to third parties any of the patents they had contributed to the pool. At no time during the five-year existence of the pool did PPP license any of its patents to a third-party laser manufacturer.

In October of 1995, Summit became the first of the two firms to receive FDA approval for the commercial use of its excimer laser for performing PRK. VISX received FDA approval in March of 1996.

3. FTC Assessment/*Rashomon* Views

In March of 1998, the Federal Trade Commission voted out a complaint against Summit and VISX charging the firms with, among other things, price-fixing and the exclusion of competition through the mechanism of the PPP pool in violation of the antitrust laws. According to the Commission, Summit and VISX had pooled *competing* apparatus patents as well as *complementary* patents. Having analyzed the broadest of the patents -- a VISX method patent covering all PRK procedures -- and concluded that the patent was invalid because of obviousness and inequitable conduct before the Patent and Trademark Office, the Commission found no blocking patents in the pool that might have justified the combination. Because Summit and VISX were the only two firms with FDA approval, they alone shared the U.S. market for laser refractive surgery devices. If, as the Commission had concluded, Summit and VISX could have competed independently absent the pooling arrangement, PPP was an agreement among competitors comprising 100% of the market to: (1) set the per-procedure fee, and (2) exclude third-party laser manufacturers seeking to license one or more of the pooled patents.

Although the Commission's analysis of the Summit/VISX pool is well-considered and supported by evidence, there may be other, perhaps equally, valid interpretations of the same patent relationships; interpretations which may yield very different legal results. If the Supreme Court pooling cases teach us anything, it is that in the realm of technology licensing, things are not always as they seem. In the case of PPP, one can look at the same patent pool and the same technologies and see, not combination of competitors, but a procompetitive agreement resolving *mutually blocking* patents.[86] Based on the uncertain claims of the pooled patents and the designs of the similar Summit and VISX machines, there may well have been a nontrivial basis for Summit to believe that it could have been blocked by one or more of VISX's patents and vice versa. A third interpretation also finds some support in the same set of facts. VISX is widely-acknowledged to have the broadest and strongest PRK-related patent portfolio in the world. Between its broad method patent -- which the Commission has challenged, but which VISX vigorously defends -- and a formidable array of apparatus patents covering most, if not all, of the ways that have been thought up for aiming an excimer laser, VISX may be justified in viewing itself as a *lawful patent monopolist*. From this perspective, PPP is transformed from an agreement among competitors into a *vertical* licensing arrangement in which VISX has extended a license to Summit without which Summit could not compete at all. It all depends on fairly small differences of opinion regarding the scope of 25 patents, most of which have never been tested in litigation.

C. Comparison of MPEG-2 and Summit/VISX

Even if we grant the possibility that the PPP pool resolved one or more blocking relationships, are the pool's price and licensing restraints justified? In other words: Could Summit and VISX have been more like the model citizens of the MPEG patent pool? Perhaps the starting point for an answer is the contrast between the two industries, their likely futures, and their historical burdens.

The MPEG-2 pool members are huge firms with enormous resources. The main business of most of the MPEG-2 pool members is

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[86]. Summit and VISX claimed that two of the Summit patents ('093 and '058) and six of the VISX patents ('913, '418, '372, '148, '204, and '388) in the PPP pool are "blocking," and that the other patents in the pool are complementary.

not the licensing of these pooled patents, but rather, the manufacture and sale of telecommunications and consumer electronics hardware. Although the MPEG patents may have great strategic significance, they are not paying the pool members' rent. The pool members appear to have entered into the arrangement in order to establish a video compression standard, to profit from the network externalities of maximally diffusing the standard, and using the standard to sell more hardware in the market of the future. In order to establish MPEG as a standard, they availed themselves of mechanisms to reduce uncertainty. The independent expert review mechanism minimizes uncertainty regarding which patents are needed to manufacture in accordance with the standard and which patents are not. At the same time, this review mechanism serves the function of assuring that all of the pooled patents are in fact complementary and *essential*; that is, *blocking*. Licensing at a relatively low royalty to any and all those requesting a license is another mechanism for overcoming uncertainty. Since it is harder to establish a standard if some players doubt whether they will be granted access, the MPEG pool members want to maximize access. Open licensing eliminates that concern while at the same time calming Justice Department fears that the pool might be used as a tool of anticompetitive exclusion.

Summit and VISX, by contrast, are small start-up companies trying to create a completely new industry based on a technological innovation. They faced a capital-intensive technology, a long product development cycle, massive regulatory barriers, and potentially ruinous patent infringement litigation. For Summit and VISX, the laser refractive surgery business was the only business, and a single adverse patent ruling -- or even the perception of vulnerability to adverse patent rulings -- could dry up their capital and put them out of business. How did they respond to these concerns? First, instead of trying to recover their capital investment by charging high machine prices, they adjusted their pricing to lower the machine acquisition cost and used the per-procedure fee as a kind of metering device; at $250 the PPF was set at a relatively high rate -- 10-15% of the cost of the PRK procedure -- to make up for the lower revenues from machine sales. The more the machines were used, the more money Summit and VISX would make in procedure fees. Second, they use the pooling arrangement to reduce the risk of litigation, while continuing to compete on machine sales, and also as a way of hedging the risk that one firm would receive FDA approval later, or perhaps not at all. At the same time, they have been quite slow to license third-party manufacturers. This probably reflects a judgment that they can maximize revenue and recover their high

development costs more quickly by using their technology exclusively, at least initially. As other firms gain FDA approval and bring out new differentiated machines, the strategy will likely shift toward licensing third parties and earning revenues from machine sales that would not otherwise have gone to Summit or VISX.

While the MPEG pool has been blessed under current agency enforcement policy, it is not clear how the arrangement would fare before the Supreme Court. If the Court looked at the MPEG arrangement and heard echoes of the *BMI* copyright pooling case, the agreement would be analyzed under the rule of reason and the procompetitive benefits would almost certainly be found to outweigh any anticompetitive effects. If, on the other hand, the Court chose to apply the *Line Materials* analysis, the MPEG pool would probably be condemned as a *per se* unlawful agreement among (some) competitors to set the price of licensing the pooled patents, notwithstanding the fact that the full value of the patents can be realized only through pooling.

The prospects for the Summit/VISX pool turn substantially upon uncertain judgments regarding the scope and validity of the pooled patents. If the Court looked at the Summit pool and saw the resolution of a blocking relationship, the arrangement could be analyzed under the rule of reason following *Standard Oil* or condemned under the *per se* rule following *Line Materials*. If the Court saw an agreement among competitors, comprising 100% of the market, it would be hard-pressed to find the single-firm veto and the per procedure fee, on balance, procompetitive. Still, nothing in the case law or current enforcement policy adequately addresses Summit/VISX's *Rashomon* problem; the uncertain economic relationships among technology rights.[87]

V. CONCLUSION

[87] At least one author has argued that because of the danger that pools will engage in cartel behavior, ambiguity regarding blocking relationships should be resolved in favor of vigorous antitrust enforcement. *See* Steven C. Carlson, Note, *Patent Pools and the Antitrust Dilemma*, 16 YALE L. J. 358, 399 (1999). This implicitly assumes, however, that the costs of underdeterrence exceed the costs of overdeterrence.

The foregoing review of antitrust analysis of patent pooling arrangements offers some perspectives on how antitrust law can facilitate or impede the production of innovation. The misapplication of the *per se* rule to pooling agreements resolving blocking relationships is the paradigmatic example of the latter, while the rule of reason analysis in the *BMI* case exemplifies the former. The discussion also underscores the value of some generally underutilized analytical tools, such as technology market analysis, in assessing the competitive effects of patent pools. The limitations of other analytical tools, such as the conventional classification of the economic relationship of patents as competing, complementary or blocking have also been highlighted. The tendency to wish away uncertainty by imposing orderly classifications upon conduct and business relationships is understandable, but ultimately antithetical to the task of analysis. For it is only by confronting the full implications of uncertainty that we can hope to develop methodologies for its management.